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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number

119508-00102

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Signature

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name

Application Number

10/767,190

Filed

January 30, 2004

First Named Inventor

William SETTER et al.

Art Unit

3721

Examiner

N.C. Chukwurah

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s)

Note: No more than five (5) pages may be provided.

I am the

☐ Applicant/inventor

☐ Assignee of record of the entire interest
See 37 CFR 3.71. Statement under 37 CFR 3.73(b)
is enclosed. (Form PTO/SB/96)

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October 2, 2007

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Note: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	:	<u>PATENT</u>
William SETTER et al.	:	Confirmation No. 4584
Serial No.: 10/767,190	:	Docket No. 119508-00102
Filed: January 30, 2004	:	Customer No. 27557
For: SYSTEM AND METHOD FOR	:	Art Unit: 3721
CONTROLLING AN IMPACT TOOL	:	Examiner: N. C. Chukwurah

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the July 19, 2007 Office Action, Applicants request a pre-appeal brief review. A Notice of Appeal, and the associated fee is submitted herewith.

In the Office Action, claims 1-3, 7-13 and 17-23 stand rejected under 35 U.S.C. 102(b) as allegedly being anticipated by U.S. Patent No. 6,311,786 to Giardino et al., and claims 4-6, 14-16 and 24-26 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Giardino et al.

Applicants respectfully traverse the rejections over Giardino et al. because Giardino et al. fails to disclose, teach or suggest the step of fitting an equation that approximates torque "by selecting *one* mathematical expression from a *set* of mathematical expressions" as recited in the claimed invention. Each rejection is addressed in detail below.

Claim Rejections 35 U.S.C. 102(b) in view of Giardino et al.

Claims 1-3, 7-13 and 17-23 stand rejected under 35 U.S.C. 102(b) as allegedly being anticipated by U.S. Patent No. 6,311,786 to Giardino et al. However, Giardino et al. fails to disclose, teach or suggest determining torque including the step of fitting an equation that approximates the time-amplitude waveform of the torque pulse by selecting one mathematical expression from a set of mathematical expressions, as recited in claim

invention. The claimed invention not only requires multiple expressions, but also requires the ability to select one expression from the multiple expressions.

(1) The Impulse and Angular Momentum Equations of Giardino et al. Do Not Provide A Set of Mathematical Expressions From Which a Torque Expression is Selected As Required By The Claimed Invention

Giardino et al. teaches determining torque T by converting impulse I (col. 4, lines 29-40), not by selecting one torque expression from a set of torque expressions, as recited in the claimed invention. In Giardino et al., torque is always determined by the formula $T=d(Ir)/dt$ (col. 4, line 40) where impulse I is always calculated as $I = \int Fdt$ (col. 4, line 11). Thus every torque pulse is analyzed, in succession, using these same two expressions. In order to accomplish the conversion of impulse I to torque T , Giardino et al. teaches the steps of: (a) equating impulse to a change in linear momentum; (b) converting linear momentum to angular momentum; and (c) equating torque to the time rate of change of angular momentum on a rigid body. See col. 4, lines 29-40. That results in the formula $T=d(Ir)/dt$ for determining torque.

Importantly, neither the impulse nor the angular momentum equations of Giardino et al. provide a mathematical expression from which a torque expression is selected. Instead, both impulse and angular momentum equations are part of the torque expression, i.e. torque is always determined by a conversion of impulse using angular momentum. The claimed invention recites that torque is determined by selecting one mathematical expression from a set (more than one) mathematical expression. Neither the impulse nor the angular momentum equation alone determines torque. Accordingly, the impulse and angular momentum equations cannot form the basis of a set of mathematical torque expressions because neither alone defines torque.

Giardino et al. assumes that all of the information required to accurately determine torque is contained within a single equation, $T=d(Ir)/dt$, and does not account for variations in fastener tightness, distortion in the torque to magnetic field or magnetic field to electrical signal. Therefore, Giardino et al. teaches neither multiple mathematical torque expressions nor the ability to select one expression from the multiple mathematical expression. Thus, if the threaded joint that the tool of Giardino et al is tightening is unique in some way, that renders the torque equation of Giardino et al. inappropriate, and its output inaccurate, such that the joint will not be properly tightened.

In contrast, the claimed invention accounts for variations in threaded fastening operations, and fits, or adjusts, the equations accordingly. As described in Applicants' specification at page 10, lines 17-20 and page 11, line 19 – page 14, line 13, the equation used in the claimed invention is selected from a number of possible equations or mathematical expressions using a curve fitting function to determine the most appropriate expression. That is, the impact tool controller must first fit the data to a number of different equations to find the best one that approximates the specific pulse waveform detected for the threaded joint before the controller can determine the torque. The equation fitting process is done in real time, i.e., until the pulse waveform data are collected and the equation fitting process is complete, the actual equation to be used for calculating torque is unknown. This approach takes a number of different fastening process parameters into account (page 11, line 21 – page 12, line 4) to arrive at a more complete conclusion about the pulse waveform. This takes into account that there are variations between fasteners and their tightness after assembly.

(2) **Claimed Invention Recites Selecting *One* Mathematical Expression From a Set of Mathematical Expressions**

As discussed above, a determination of torque in Giardino et al. requires both the impulse and angular momentum equations. Therefore, even accepting the flawed argument that the impulse and angular momentum equations form a set of mathematical torque expressions, then two equations are selected from the alleged set, not one, as recited in the claimed invention. That is, because Giardino et al. requires both impulse and angular momentum equations to determine torque, more than one equation, two (impulse and angular momentum equations) are selected from the supposed set (formed by the impulse and angular momentum equations). In contrast, the claimed invention recites selecting one mathematical torque expression from a set of mathematical torque expressions. Because neither the impulse nor angular momentum equations together (and individually) determine torque in Giardino et al., one would necessarily have to select two equations from the alleged set of mathematical expressions, in order to determine torque.

(3) **There is No Evidence That Giardino et al. is "Capable of" Having a Set of Mathematical Torque Expressions**

No evidence has been provided that Giardino et al. is "capable of" having more preprogrammed sets of mathematical torque expressions. The process of "selecting" an

expression requires that there be some algorithm or computer function that accepts input, performs an analysis, and then makes a decision to select a particular mathematical expression. The Examiner has not pointed to anything in Giardino et al. that teaches or suggests any of these "selecting" steps. In fact, there is nothing in Giardino et al. to suggest that the requisite software or hardware is taught by Giardino et al.

Also, the Examiner's suggestion that Giardino et al. is "*capable* of having more preprogrammed sets of mathematical torque expressions" does not meet the test for anticipation, which is identity. Moreover, if by "*capable*" the Examiner means "*inherent*," neither evidence nor rational is provided to support that assertion. "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" *In re Robertson*, 169 F.3d 743, 745, 49 U.S.P.Q.2d 1949, 1950-51 (Fed. Cir. 1999). The Examiner has provided no evidence that the step of selecting one mathematical expression from a set of mathematical expressions is necessarily present in Giardino et al.

Anticipation requires that every limitation of a claim must identically appear in a prior art reference. See *Gechter v. Davidson*, 43 U.S.P.Q. 2d 1030, 1032 (Fed. Cir. 1997). The step of selecting one mathematical expression from a *set* of mathematical expressions is not identically found in Giardino et al. Absence from the prior art reference of any claimed element negates anticipation. See *Rowe v. Dror*, 42 U.S.P.Q.2d 1550, 1553 (Fed. Cir. 1997).

Therefore, in view of the above, Applicants request reconsideration and withdrawal of the rejection under 35 U.S.C. 102(b), and allowance of independent claims 1, 11 and 21.

Dependent claims 2-10, 12-20 and 22-26 are also believed to be allowable for the same reasons as discussed above. Moreover, these claims recite additional features not found in Giardino et al. For example, claims 2 and 12 recite that the equation/mathematical expression includes a parameter selected from a list of parameters. The passage in Giardino et al. (col. 4, lines 20-25) cited in the Office Action merely references t_r and discloses buffering data so that data points immediately before and after the impulse I are captured, and does not relate to the parameters recited in the claims.

Claim Rejection - 35 U.S.C. § 103(a) in view of Giardino et al.

Claims 4-6, 14-16 and 24-26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Giardino et al. Applicants submit that a prima facie case of obviousness has not been established with respect to claims 4-6, 14-16 and 24-26 because Giardino et al fails to disclose, teach, suggest or render obvious all of the limitations of independent claims 1, 11 and 21. As discussed above, Giardino et al. fails to disclose, teach or suggest the step of fitting an equation that approximates the time-amplitude waveform of the torque pulse by selecting one mathematical expression from a set of mathematical expressions. Moreover, nothing in Giardino et al. suggests that it would have been obvious to select one equation from a set of mathematical expressions. Instead, Giardino et al. teaches that only one equation is needed, $T=d(Ir)/dt$, as discussed above. Accordingly, Applicants submit that dependent claims 4-6, 14-16 and 24-26 are allowable for the same reasons as discussed above with respect to claims 1, 11 and 21. Moreover, these claims recite additional features not found in Giardino et al. For example, claims 4, 5, 14, 15, and 25 recite specific equations not found in Giardino et al.

In view of the foregoing, Applicants believe the application is in condition for allowance. Prompt and favorable treatment is respectfully solicited.

Respectfully submitted,



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